

REMARKS

This amendment is responsive to the Final Office Action mailed on December 28, 2007. Claims 1-44 stand rejected. Claims 3-6, 15, 17-20, 29, 31-34, 43, and 44 have been amended. Claims 2, 9, 16, 23, 30 and 37 have been canceled. In view of the following remarks, Applicant respectfully submits that this application is in complete condition for allowance and requests reconsideration of the application in this regard.

Rejections under 35 U.S.C. § 102

The Examiner has rejected claims 43 and 44 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent Publication No. 2002/0163983 to Redferm (*Redferm*). The Examiner contends that *Redferm* discloses all of the elements of Applicant's independent claims 43 and 44. Applicant disagrees for the following reasons.

Applicant has amended independent claim 43 to recite in part "combining the shaped DMT symbol and the shaped prefix, wherein the combined shaped DMT symbol and shaped prefix generate a full rectangle symbol with a length less than or equal to a boundary prefix length," which is fully supported in Applicant's specification at FIG. 7 and paragraphs [0106]-[0108]. The result from the amended claim is a combined prefix and symbol that have a length less than or equal to a boundary prefix length. *Redferm* fails to disclose generating a full rectangle symbol with a length less than or equal to a boundary prefix length at paragraph [0027] cited by the Examiner or anywhere else in the reference. Moreover, FIG. 2, which is referenced in paragraph [0027] of *Redferm* discloses windowing two halves of a prefix, which are added together and that summation is then added to the symbol. This resulting combination would have a length longer than the boundary prefix length recited in Applicant's amended claim.

In order for a reference to anticipate a claimed invention, the reference must teach each and every element in the precise arrangement set forth in the claim. *See* MPEP § 2131. If the reference fails to teach even one of the claimed features, the reference does not and cannot anticipate the claimed invention. Based on the deficiencies of *Redferm* identified above, Applicant respectfully requests that the rejection for claim 43 be withdrawn.

The Examiner has similarly rejected claim 44 as being anticipated by *Redferm* additionally citing paragraph [0034], which discloses a DMT receiver without a receiver

window. Applicant has amended claim 44 similar to claim 43. In addition to the deficiencies in *Redferm* due to Applicant's amendment as set forth above, *Redferm* also does not disclose "shaping a DMT symbol that has not been windowed for transmission" as recited in Applicant's claim 44. Rather, at paragraph [0034] cited by the Examiner, *Redferm* discloses recovering data "without receiver windowing." Therefore Applicant asserts that claim 44 is also patentable over *Redferm* and respectfully requests that the rejection for claim 44 be withdrawn.

Rejections under 35 U.S.C. § 103

The Examiner has rejected claims 1, 8, 10-15, 22, 24-29, 36, and 38-41 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication No. 2002/0154716 to Erving et al. (*Erving*) in view of U.S. Patent No. 6,563,841 to Nedic et al. (*Nedic*). The Examiner has rejected claims 2-7, 9, 16-21, 23, 24, 30-35, and 37 under 35 U.S.C. § 103(a) as being unpatentable over *Erving* in view of *Nedic* and in view of U.S. Patent No. 6,999,504 to Amrany et al. (*Amrany*). Claims 1, 15 and 29 represent the independent claims. The Examiner contends that *Erving* and *Nedic* disclose or suggest the elements of Applicant's independent claims. Applicant disagrees for the following reasons.

With respect to independent claim 1, the Examiner contends that *Erving* discloses the elements of the claim, but the Examiner admits that *Erving* fails to disclose notches. The Examiner is relying on *Nedic* for the disclosure of notches. *Nedic* discloses and is directed to an adaptive equalizer algorithm and or apparatus, which operates on each bin individually as an alternative to using a time domain equalizer (TEQ) in digital subscriber lines (xDSL) transceivers. (*Nedic* col. 1, lines 19-22). Specifically *Nedic* discloses "adaptive notching narrow-band radio frequency interference from the received DMT signal" (*Nedic*, col. 13, lines 32-34) (emphasis added). *Nedic* fails to disclose "reducing the number and severity of notches that the TEQ introduces in a transfer function shortened main channel in the DMT system" as recited in claim 1 as *Nedic* doesn't use TEQ and therefore wouldn't generate TEQ introduced notches. Additionally, *Nedic* specifically discloses notches associated with the received DMT signal, not generated by the receiver. Therefore Applicant asserts that the combination of *Erving* and *Nedic* does not disclose "reducing the number and severity of notches that the TEQ introduces in a

transfer function of a shortened main channel in the DMT system” as recited in Applicant’s claim 1.

Furthermore, assuming *arguendo* that the combination of *Erving* and *Nedic* did disclose TEQ introduced notches, *Nedic* further discloses, “The equalization technique of the present invention largely overcomes the limitations of conventional time domain equalizer (TEQ) method and permits the use of a higher number of useable subchannels under harsh transmission conditions.” (*Nedic*, col. 13, lines 24-28). *Nedic* also discloses that “the present invention is advantageous in view of the complexities involved in TEQ equalization and windowing for upstream direction in xDSL data transmissions.” (*Nedic*, col. 13, lines 40-43). *Nedic* discloses a completely different methodology from *Erving*, and *Nedic* discloses that this methodology is an improvement over the methodologies used in *Erving*. For these reasons, Applicant asserts that there would be no motivation by one skilled in the art to combine these two technologies to result in Applicant’s claim 1 which also uses TEQ methods.

Moreover, Applicant has also amended claim 1 to additionally include “selecting an eigenvector with a subspace-based design method” and “computing TEQ filter coefficients with the eigenvector” to further define designing a TEQ. The Examiner contends selecting and using the Eigenvector is disclosed in *Amrany*.

Amrany discloses using blind methods to equalize or estimate spectral shaping and coupling frequency transfer functions. *Amrany* discloses “[a]s is known, blind equalizers make use of linear prediction, CMA, MMA, RCA algorithms,” and that “[b]lind identification will be based on subspace methods.” (*Amrany*, col. 12, lines 52-58). *Amrany* fails to disclose “selecting an eigenvector with a subspace-based design method” and “computing TEQ filter coefficients with the eigenvector” as recited in Applicant’s amended independent claim 1. The blind identification methods disclosed in *Amrany* compensate for the cross talk, not compute TEQ filter coefficients. For the reasons set forth above, Applicant submits that *Erving*, *Nedic* and *Amrany*, alone or in combination, fail to teach or suggest all of the elements of Applicant’s amended independent claim 1. Additionally, the Examiner provides no objective reason why one of ordinary skill in the art would be motivated to modify *Erving* with either *Nedic* or *Amrany* to include the claimed subject matter of amended independent claim 1. Therefore Applicant

respectfully requests that the rejection for claim 1, and claims 3-8, and 10-14 which depend therefrom, be withdrawn. Applicant has canceled claims 2 and 9 rendering their rejections moot.

Independent claim 15 is a system claim with means for performing each of the steps of the method in claim 1. Independent claim 15 has been amended similar to claim 1 to further define the means for designing a TEQ. For the same or similar reasons as set forth above, Applicant asserts that amended independent claim 15 is patentable over the combination of *Erving*, *Nedic* and *Amrany* and respectfully requests that the rejection for claim 15, and claims 17-22 and 24-28 which depend therefrom, be withdrawn. Applicant has canceled claims 16 and 23 rendering their rejections moot.

Independent claim 29 is a claim directed to a computer readable medium, with computer readable instructions for performing each of the steps of the method in claim 1. Independent claim 29 has been amended similar to claim 1 to further define the computer readable instruction to design a TEQ. For the same or similar reasons as set forth above, Applicant asserts that amended independent claim 29 is also patentable over the combination of *Erving*, *Nedic* and *Amrany* and respectfully requests that the rejection for claim 29, and claims 31-36 and 38-42 which depend therefrom, be withdrawn. Applicant has canceled claims 30 and 37 rendering their rejections moot.

As a final matter, Applicant further notes that the remaining dependent claims recite additional features that further distinguish these claims from the reference cited by the Examiner. However, in the interest of prosecutorial economy, these remaining claims will not be addressed separately herein.

Conclusion

Applicant has made a bona fide effort to respond to each and every requirement set forth in the Office Action. In view of the foregoing amendments to the claims and remarks given herein, Applicant respectfully believes this case is in condition for allowance and respectfully requests allowance of the pending claims. If the Examiner believes any detailed language of the claims requires further discussion, the Examiner is respectfully asked to telephone the undersigned attorney so that the matter may be promptly resolved. The Examiner's prompt attention to this matter is appreciated.

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Applicant is of the opinion that no additional fee is due as a result of this Amendment, except for a one-month extension of time. Payment of all charges due for this filing is made on the attached Electronic Fee Sheet. If any additional charges or credits are necessary to complete this communication, please apply them to Deposit Account No. 23-3000.

Respectfully submitted,

April 28, 2008
Date

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